

PATENT SPECIFICATION

457,767

Application Date: May 27, 1935. No. 15390/35.

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Specification Accepted; Nov. 27, 1936.



PROVISIONAL SPECIFICATION

No. 15390 A.D. 1935.

Improvements in Means for Detachably Attaching Metal Plates or other Similar Flat Sectional Members together or to other Members

I, FREDERICK ARTHUR MANNING, a British Subject, of Kismet, Poynders Road, Clapham Park, London, S.W.4, do hereby declare the nature of this invention to be as follows:—

This invention relates to means for detachably attaching metal plates, thin pieces of timber or other similar flat sectional members together, either temporarily or permanently. The invention is more particularly applicable to metal plates, thin pieces of timber or other material, such as, for instance, asbestos sheet, for the construction of nests of shelves, book cases, filing cabinets, plate and other racks, and other similar rectangular structural devices. It is, however, also applicable to securing such flat sectional members in any desired position or angular relationship either with their edges abutting or in edge to side relationship.

According to the invention the means for detachably attaching the sectional members together comprises a screw or other fastening device having a centre part cut away for the whole or a part of its length on a plane containing its axis so as to leave two segmental portions, said portions being adapted to receive between them the sectional member to be secured or a part of this member.

The sectional member, or each member, is formed with one or more slots in the edge or each edge to be fixed to another member, this slot leaving a fillet adapted to fit in between the two segmental portions. On to the ends of these segmental portions a nut may be screwed. These ends may be tapered and the nuts may have countersunk parts to facilitate the interengagement of the nuts and screwed portions, but this is not essential. Instead of using standard nuts, closed nuts may be provided.

By using securing means according to this invention a structure can be built up of flat sectional members, without flanges, angle members or the like, and thus these

flat sectional members can, when detached, be packed so as to occupy a minimum of space for convenience in storage and transit.

In a practical embodiment as applied to a nest of shelves built up of flat metal plates constructed and provided with fastening devices according to this invention, the structure comprises two vertical side members, a back, and a series of horizontal members detachably attached to the sides and back and constituting the shelves. The side members are arranged edge-on to one side of the plate forming the back and the side members are formed adjacent their rear edges with a series of slots leaving fillets for engagement with the two segmental screw portions, while the back plate is provided with a hole located centrally with respect to each fillet through which the two segmental screw portions can be passed. After the screw portions have been placed in position on the parts to be fixed these can all be clamped together by nuts or by a nut on one end and headed portions engaging a washer on the other end.

The shelves, which are fixed with their rear and side edges, edge-on to the back and side plates, have slots formed in all of said edges, while the said plates are provided with corresponding holes for the screw portions.

The screw portions may be formed by taking a headed screw and forming a saw cut from one end to the other, the saw cut removing a thickness of metal about equal to that of the plate to be fixed by the screw. In this case a washer is preferably provided at the headed end and a nut at the other end. The saw cut need not extend from one end to the other but may only extend a short distance down the shank either from the headed end or from the other end, provided that the cut is of a sufficient length to accommodate the fillet. Instead of forming the screw portions by a simple saw cut, a centre piece of the screw may be cut away and re-

moved. Where advantageous this centre piece may be merely removed to enable the fillet to be accommodated and then replaced so that it projects beyond the end of the screw in which case the nut will be threaded along the centre piece and then along the whole screw including the two segmental parts and the centre piece. In joining two members edge to edge both members will be formed near these edges with slots forming two contiguous

fillets both of which fit in between the two segmental parts of the screw.

Alternatively, instead of using a screw for the fastening device, any other equivalent may be employed, such as, for example, a pin with a hole therein for the reception of a cotter pin.

Dated this 27th day of May, 1935.

BREWER & SON,
33, Chancery Lane, London,
Patent Agents for the Applicant.

PROVISIONAL SPECIFICATION

No. 10260 A.D. 1936.

Improvements in Means for Detachably Attaching Metal Plates or other Similar Flat Sectional Members together or to other Members

I, FREDERICK ARTHUR MANNING, a British Subject, of Kismet, Poynders Road, Clapham Park, London, S.W.4, do hereby declare the nature of this invention to be as follows:—

This invention relates to means for detachably attaching metal plates, thin pieces of timber or other similar flat sectional members either temporarily or permanently. The invention is more particularly applicable to metal plates, thin pieces of timber or other material, such as for instance asbestos sheets, for the construction of nests of shelves, book cases, filing cabinets, plate and other racks, portable buildings and other similar rectangular structures or structural devices. It is, however, also applicable to securing such flat sectional members in any desired position or angular relationship either with their edges abutting or in edge to side relationship.

In the Specification of Application No. 15390, 27th May, 1935, there is described means for detachably attaching the sectional members together comprising a fastening device, split or cut for the whole or a part of its length on a plane containing its axis so as to leave a portion or portions adapted to receive a part of at least one of the sectional members, said fastening device being adapted also to project through a hole in the other sectional member and means for engaging said fastening device for fastening said portion or portions to the sectional member or members and/or to each other. The fastening devices described in this Specification may comprise a screw having a central part cut away for the whole or a part of its length on a plane containing its axis so as to leave two segmental portions adapted to receive a part of at least one of the sectional members between them and a nut at each end for fastening

the two segmental portions of the screw together and to the sectional members. Alternatively, the device may comprise a bolt having a screw at one end and a head at the other, the bolt being cut away as before for a part or the whole of its length so as to leave two segmental portions and where the bolt is cut away for the whole of its length a washer is provided for fitting around the bolt adjacent the head for connecting the segmental parts of the bolt together at the headed end and in this case a nut is provided at the screwed end only of the bolt.

These devices, while being satisfactory for detachably attaching the sectional members together, necessitate the formation of a slot in one of the members and a hole in the other with the result that the sectional members are not interchangeable.

The object of the present invention is to provide certain forms of construction of a fastening device in accordance with the said invention which will permit the sectional members to be of a uniform construction. As such the sectional members are interchangeable.

In one form of such fastening device a screw is provided at one end adapted to engage in a hole in one sectional member and a shank is formed at the other end, said shank being cut away for a portion of its length on a plane containing its axis to receive in said cut away portion a part of the other sectional member, the remainder of said shank extending laterally and being adapted to engage in a hole in said other sectional member, the laterally extending portion being undercut to form a hook-shaped end adapted to engage with one edge of said part of the sectional member received in the cut away portion. A nut is provided on the screwed end adapted to lock the hook-shaped end in engage-

ment with the said edge of the sectional member and adapted to clamp the sectional member through which the screw passes in position.

5 In another form of the fastening device this is formed with a screw portion and a shank portion as in the last construction but both the screw portion and the shank portion have a centre part cut away on a
10 plane containing its axis to form two segmental portions in between which part of one of the sectional members can be fitted, the ends of the shank portion remote from the screwed end having oppositely extending
15 projections each of half the width or diameter of the shank. These projections are adapted to engage in a hole in said sectional member and are adapted to fit together, said projections being undercut
20 to form hook portions adapted to engage with the edge of the part of the sectional member fitting between the two segmental portions. The segmental portions of the screwed end are adapted to pass through a
25 hole in the other sectional member and to receive a nut by which said portions are fixed together and to the sectional members. With this form of fastening device the cut away part of the screwed end
30 is preferably increased in width towards its end so that as the nut is screwed off the shank portions are permitted to separate to allow these shank portions to be engaged with the sectional member to
35 be received between them, while the nut still remains in engagement with the threads on the end of the screw.

These fittings are particularly applicable to fastening sectional members in
40 edge to side relationship. For fastening members edge to edge there is preferably provided a fastening device which includes a screw part and a shank part both split on a plane containing its axis, each
45 shank part carrying a lateral extension which is disposed in a different position

on the one shank part to that on the other shank part, said lateral extensions being adapted, when said parts are brought together, to receive the two sectional members between them with the shank extending through a hole in one of said sectional members. The lateral extensions in turn are formed on the end remote from said shank portion with oppositely projecting
55 lugs of half the width of the lateral extension, said lugs being adapted to fit together and to pass through a hole in the other sectional member. A nut is provided for engaging said screwed portion
60 for clamping the two parts together. The screw parts may be so formed that they may be fixed together by the nut in two or more positions in order to vary the space between the lateral extensions to suit
65 different thicknesses of sectional members.

The constructions hereinbefore described are advantageous in that all the sectional members may be formed with holes of uniform size and at a uniform distance
70 from the edge so that these plates are interchangeable.

It will be understood that instead of using a screw with a nut as the fastening device any other equivalent may be employed, such as for instance a pin with a
75 hole therein for the reception of a cotter pin. Further, instead of using standard nuts, closed nuts may be provided.

By using securing means according to this invention a structure can be built up of flat sectional members without flanges, angles members or the like, and thus these flat sectional members can, when detached, be packed so as to occupy a minimum of space for convenience in storage
85 and transit.

Dated this 7th day of April, 1936.

BREWER & SON,

33, Chancery Lane, London,
Patent Agents for the Applicant.

COMPLETE SPECIFICATION

Improvements in Means for Detachably Attaching Metal Plates or other Similar Flat Sectional Members together or to other Members

I, FREDERICK ARTHUR MANNING, a British Subject, of Kismet, Poynders Road, Clapham Park, London, S.W.4, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following
95 statement:—

This invention relates to means for detachably attaching metal plates, thin pieces of timber or other similar flat sec-

tional members, either temporarily or permanently in edge to side or edge to
100 edge relationship. The invention is more particularly applicable to metal plates, thin pieces of timber or other material, such as for instance asbestos sheets, for the construction of nests of shelves, boxes,
105 cases, book cases, filing cabinets, plate and other racks, portable buildings and other similar rectangular structures or structural devices. It is however, also applic-

able to securing such flat sectional members in any desired position or angular relationship either with their edges abutting or in edge to side relationship.

5 In the attachment of metal plates to each other or to other objects it has been proposed to provide a bolt split for the whole of its length on a plane containing its axis, said bolt having a screw at one
10 end and having a shank at the other end formed with a hooked shaped end adapted to engage with one part and a nut on the screwed end adapted to engage the other part and on being tightened to draw the
15 hook shaped end into clamping engagement with the first part to clamp the two parts to be attached together. In this proposal, however, the parts to be attached were arranged side by side and not in
20 edge to side or edge to edge relationship and the bolt merely passed through two coinciding holes in the said two parts.

According to the invention the flat sectional members are attached together in
25 edge to side or edge to edge relationship by fastening devices each of which is split or cut away for the whole or a part of its length on each side of a plane containing its axis so as to leave one or more portions
30 and thus form a slot or recess in or between said portion or portions, which slot or recess receives a part of at least one of the sectional members, said fastening device also projecting through a hole in the
35 other sectional member, and means for engaging said fastening device for fastening said portion or portions to the sectional member or members and/or to each other.

The fastening device may be made of
40 any one of a number of different forms. In one form the device comprises a screw having a central part cut away for the whole or a part of its length on each side of a plane containing its axis so as to leave
45 two segmental portions which receive a part of at least one of the sectional members between them. The screw will then be provided with a nut at each end for fastening the two segmental portions of
50 said screw together and to the sectional members. With a fastening device of this form the sectional member or each member is formed with one or more slots in the edge or each edge to be fixed to
55 another member, this slot leaving a fillet to fit between the two segmental portions. In cases where the sectional members are to be secured in edge to side relationship, one of the members is provided with a hole
60 through which the screw can be passed, the nut on this end of the screw, when tightened, acting to clamp the sectional member in position.

A further form of fastening device comprises a bolt having a screw at one end and

a head at the other end, the screw being cut away for the whole or a part of its length on each side of a plane containing its axis so as to leave two segmental portions which receive a part of at least one
70 of the sectional members between them.

In this case, only one nut is provided for screwing on the end of the screw. Where the bolt is cut away for the whole
75 of its length a washer is provided for fitting around the bolt adjacent the head for connecting the segmental parts of the bolt together at the headed end.

In another form of fastening device a screw is provided at one end engaging in a hole in one sectional member and a shank is formed at the other end, said shank being cut away for a portion of its length on each side of a plane containing its axis
80 to receive a part of one of the sectional members, the remainder of said shank extending laterally and being undercut to form a hook-shaped end engaging with one edge of said part of the sectional member received in the cut away portion. A
85 nut is provided on the screwed end to lock the hook-shaped end in engagement with said edge of the sectional member and to clamp the other sectional member through which said screw passes in position.
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In a still further form of the fastening device this is formed with a screw portion and a shank portion as in the last construction but in this case both the screw portion and the shank portion have a
100 centre part cut away on each side of a plane containing its axis to form two segmental portions in between which a part of one of the sectional members can be fitted, the ends of the shank portion remote from the screwed end having oppositely extending projections each of half the width or diameter of the shank, which
105 projections fit together, said projections being undercut to form hook portions to engage with the edge of said part of the sectional member fitted therein, while the segmental portions at the screwed end pass through a hole in the other sectional member and receive a nut by which said portions are fixed together and to the sectional
110 members. With this form of fastening device, the cut away part of the screwed end is preferably increased gradually in width towards the end so that as the nut
115 is screwed off, the shank portions are permitted to separate to allow these shank portions to be engaged with the sectional member, while the nut remains in engagement with the threads on the end of the
120 screw.
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The fittings already described are particularly applicable to fastening sectional members in edge to side relationship, although they may be applied for fixing
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such members edge to edge. For fixing members edge to edge there is preferably provided a fastening device which includes a screw portion and a shank portion with a lateral extension, said screw and shank portions being split on a plane containing their axes to form two segments, while said lateral extension is cut away on each side of a plane containing its axis to form a part extension on each segment. The part extension is disposed in a different position on the one segment to that on the other segment, said part extensions when brought together receive the two sectional members between them with the shank portion extending through a hole in one of said sectional members. The cut away part of the lateral extensions extend for a part only of their length and they are formed on the end remote from said shank part with oppositely projecting lugs of half the width of the lateral extension, said lugs being adapted to fit together and to pass through a hole in the other sectional member. A nut is provided for engaging said screw portion for clamping the said two parts together. The screw parts may be so formed that they may be fixed together by the nut in two or more positions in order to vary the space between the lateral extensions to suit different thicknesses of sectional members.

A structure according to this invention can be built up of flat sectional members, without flanges, angle members or the like, and thus these flat sectional members can, when detached, be packed so as to occupy a minimum space for convenience in storage and transit. Examples of the fastening device according to this invention are illustrated in the accompanying drawings in which:—

Fig. 1 is a perspective view illustrating a rectangular structure built up of two side and two end members with a base, the end members being attached to the side and base members in edge to side relationship.

Fig. 2 shows one form of the fastening device according to this invention.

Fig. 3 is a section through a part of the structure illustrating the application of the fastening device shown in Fig. 2.

Figs. 4 and 5 are similar views to Figs. 2 and 3 but illustrating another form of the fastening device.

Figs. 6 and 7 are similar views to Figs. 2 and 3 but illustrating a further form of the fastening device.

Figs. 8 and 9 show similar views to Figs. 2 and 3 of a still further form of the fastening device.

Fig. 10 illustrates in side elevation a device for attaching flat sectional mem-

bers with their edges abutting against each other, the flat sectional members being shown in section.

Fig. 11 is a plan view of the arrangement shown in Fig. 10.

Fig. 12 is a perspective view illustrating the two parts of the fitting shown in Fig. 10 separated from each other.

Fig. 13 is an end view of the fitting shown in Fig. 10 illustrating how the position of the two parts can be changed in order to accommodate flat sectional members of different thicknesses.

As shown in Fig. 1 of the accompanying drawings illustrating the application of the invention to connecting flat sectional members in edge to side relationship, the side members *a* and *b* and the end members *c* and *d* are all formed in suitable positions adjacent their edges with a series of holes *e* to receive the fastening devices. The holes will be shaped according to the type of fastening device to be used for fastening the sectional members together but in all cases the holes will be so arranged as to leave a fillet *f* between the hole and the adjacent edge of the flat member, which fillet on one of the members will be received in the fastening device. The fastening device will extend through the hole in the other flat member.

In the form of fastening device shown in Figs. 2 and 3, the screw *g* is cut away diametrically for the whole of its length to leave a gap *g'* to receive the fillet *f* on one plate *c*. In this case a rectangular hole or slot *c'* is formed in the plate *c* to receive a nut *g''* which screws on one end of the screw *g* and abuts against one edge of the slot shown in Fig. 3. The screw extends through a hole *a'* in the plate *a* and receives a nut *g''* which connects the screw parts together at this end and also clamps the plate *a* against the edge of the plate *c*. In Figs. 4 and 5 the construction is similar to that shown in Figs. 2 and 3 and like parts are indicated by like reference numerals. In this construction, however, instead of the nut *g''* the screw is formed with a head *g'* and a washer *g''* is provided to surround the screw and lie against the head for the purpose of holding the parts of the screw together at the headed end.

In the construction shown in Figs. 6 and 7 the fastening device comprises a bolt formed with a screw *h* at one end and a shank *h'* at the other end. The shank *h'* and the screw *h* is partially cut away at *h''* on a plane passing diametrically through the axis for the reception of the fillet *f* on the plate *c*. The shank portion is formed with a lateral extension *h''* which is adapted to pass through a hole *e* in the

plate *c* and this extension is formed with an undercut portion *h*⁴ shaped to receive one edge of the fillet *f* as shown in Fig. 7.

The screw portion is slotted at *h*⁵ to receive the opposite edge of the fillet. The screw part *h* is adapted to fit through the hole *e* in the plate *a* and a nut *i* is then threaded on to the screw portion *h* and is tightened up to force the fillet into engagement with the undercut portion and to clamp the plate *a* in position. The parts are so arranged that in the clamped position shown in Fig. 7 the edge of the plate *c* remains in engagement with the slot *h*⁵.

In the construction shown in Figs. 8 and 9 the fastening device again comprises a screwed portion and a shank portion. In this case, however, the centre part of the screw portion and part of the shank portion adjacent the screw is cut away to form two segmental screwed parts *j*, *j*¹ and two segmental spigot parts *j*², *j*³. The extreme end of the shank portion is divided on a plane extending at right angles to the remainder of the shank portion and the screwed portion to form two lateral extensions *j*⁴, *j*⁵ which are each of half the diameter of the spigot portion in width and which are adapted to fit together. These extending parts are undercut at *g*⁴ to form hook-like portions. The fillet *f* of the plate *c* is adapted to be received between the segmental spigot parts *j*², *j*³ and its inner edge is adapted to engage with the undercut portions *j*⁴ as indicated in Fig. 9, the lateral projections *j*⁴, *j*⁵ extending through the hole *e* in the plate *c*. The segmental screw parts extend through the hole *e* in the plate *a* and receive a nut *k* which clamps the two parts together on the fillet *f* and also clamps the plate *a* to the plate *c*. As shown clearly in Fig. 9 the gap formed between the screwed segments *j* and *j*¹ is increased in width towards their outer ends at *j*² so that as the nut *k* is screwed towards said ends the spigot portions may be opened out to receive the fillet *f* without removing the nut *k* completely off the screwed segments. Alternatively, the ends of the segments can be turned outwards so as to avoid tapering the gap in the middle portions of the segments but obtain the same effect as with the tapered gap form.

The constructions shown in Figs. 6 and 7 and 8 and 9 are advantageous in that all the plates may be formed with holes of a uniform size and at a uniform distance from the edge so that these plates are interchangeable. With the construction illustrated in Figs. 6 and 7 the fastening devices are preferably arranged alternatively with the shank portion *h*¹ on

opposite sides of the plates. For instance, as shown in Fig. 1, the upper fastening devices for attaching the plate *c* to the plates *a* and *b* are arranged with the shank portion *h*¹ on the inside of the structure, while the lower fastening devices for securing these plates together are arranged with the shank portion *h*¹ on the outside of the structure.

In the construction shown in Figs. 10 to 13 adapted for the attachment of two plates *l* and *m* together with their edges in abutting relationship the fastening device includes a screw portion and a shank portion split on a plane containing its axis, the screwed parts *n* and *n*¹ and the shank parts *n*², *n*³ being arranged to fit together and to be secured by a nut *o* threaded on to said screwed part. The shank portion *n*² is formed with a part lateral extension *n*¹ in the form of a bar; while the shank portion *n*³ is formed with a similar part lateral extension *n*⁴. These two parts form a complete lateral extension equal in width to the diameter of the combined shank portions but are located in different positions longitudinally of the shank, the portion *n*⁴ being located nearer to the screw than the portion *n*³ so that when the screw and shank portions are fitted together and connected by means of the screw as previously explained, the part lateral extensions *n*⁴, *n*⁵ are superposed. The part lateral extension *n*⁴ is formed at its end with a downward projecting lug *n*⁶, while the part lateral extension *n*⁴ is formed with a similar projecting lug *n*⁷ extending upwardly. These projecting lugs are of half the width of the lateral extension and are disposed on opposite sides thereof so that the lugs fit together. This fastening device is adapted to be assembled as shown in Figs. 10 and 11 by fitting one part to the underside of the plates *l* and *m* with the extension *n*⁵ extending beneath these plates and the projecting lug *n*⁷ and the shank *n*³ extending up through holes *e* in said plates, while the lateral extension *n*⁴ extends along the top of the plates with the projecting lug *n*⁶ and the shank portion *n*² extending down through the holes *e*. In this position the nut *o* is applied to the two screwed portions and this nut fixes the two parts of the fastening device together and holds the two plates in their abutting relationship. It will be understood that a number of these fittings are applied to the plates and these fittings thus serve to connect plates of any suitable width to each other in edge to edge relationship.

It will be understood that the relative positions of the screw portions *n*, *n*¹ and the shank portions *n*², *n*³ will determine

within limits the space between the lateral extensions n^4 , n^5 . By adjusting the positions of these portions relative to each other by increments of the pitch of one thread as indicated in Fig. 13, the nut o can secure these parts together with their extensions in a number of different positions whereby the space between the extensions can be varied to suit different gauge of plates or other members to be fixed in edge to edge relationship by them.

This fitting is so arranged that the plates or other flat sectional members only require to be formed with holes of uniform diameter and spaced at equal distances from their edges so as to allow any of the plates used in conjunction with the forms of fastening device described with reference to Figs. 6 to 9 to be used, also with the device described with reference to Figs. 10 to 13.

It will be appreciated that these fastening devices may be applied to a number of different uses other than those hereinbefore described and specifically indicated. For instance, shelves may be fixed with their rear and side edges edge on to back and side plates. The fittings may also be modified in certain minor respects without departing from the invention. For instance, in the construction shown in Figs. 1 to 5, the saw cut need not extend from one end to the other but may extend only a short distance along the length of the bolt sufficient to accommodate the fillet. Further, instead of forming the screw portions by a simple saw cut, the centre portion of the screw may be cut away and removed. Where advantageous, this centre piece may be merely removed to enable the fillet to be accommodated and may then be replaced so that it projects beyond the end of the screw, in which case the nut to be threaded on to the screw will be threaded along the centre piece first and then along the whole screw including the two segmental parts and the centre piece.

Alternatively, instead of using a screw with a nut as the fastening device, any other equivalent may be employed, such as for example a pin with a hole therein for the reception of a cotter pin. Instead of using standard nuts as shown, closed nuts may be provided.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. Flat sectional members attached together in edge to side or edge to edge relationship by fastening devices each of which is split or cut away for the whole

or a part of its length on each side of a plane containing its axis so as to leave one or more portions and thus form a slot or recess in or between said portion or portions, which slot or recess receives a part of at least one of the sectional members, said fastening device also projecting through a hole in the other sectional member and means for engaging said fastening device for fastening said portion or portions to the sectional member or members and/or to each other.

2. Flat sectional members attached together as claimed in Claim 1, in which the fastening device comprises a screw having a centre part cut away for the whole or a part of its length on a plane containing its axis so as to leave two segmental portions which receive a part of at least one of the sectional members between them.

3. Flat sectional members attached together as claimed in Claim 1, in which the fastening device comprises a bolt having a screw at one end adapted to engage in a hole in one sectional member and a shank at the other end which is cut away for a portion of its length on each side of a plane containing its axis to receive a part of the other sectional member, the remainder of said shank extending laterally and being undercut to form a hook-shaped end engaging with one edge of the part of said sectional member received in the cutaway portion and a nut on said screw locking the hook-shaped end in engagement with the said edge of the sectional member and clamping the other sectional member in position.

4. Flat sectional members attached together as claimed in Claim 1, in which the fastening device comprises a screw portion and a shank portion, said screw portion and shank portion having a centre part cut away on each side of a plane containing its axis to form two segmental portions in between which a part of one sectional member is fitted, the ends of the shank portions remote from the screwed end having oppositely extending projections each of half the width or diameter of the shank adapted to fit together, said projections being undercut to form hook portions engaging with the edge of the said part of the sectional member fitted therein, while the screwed portions pass through a hole in the other sectional member and receive a nut by which said portions are fixed together and to the sectional members.

5. Flat sectional members attached together as claimed in Claim 4, in which the cut away part of the screw is gradually increased in width towards its end so that as the nut is screwed off the shank por-

tions are permitted to separate to allow these shank portions to be engaged with the sectional member, while the nut is in position on the end of the screw.

- 5 6. Flat sectional members attached together as claimed in Claim 1, in which said members are attached together in abutting relationship by a fastening device including a screw portion and a
10 shank portion with a lateral extension, said screw and shank portions being split on a plane containing their axes to form two segments, while said lateral extension is cut away on each side of a plane con-
15 taining its axis to form a part extension on each shank segment, the part extensions being disposed in a different position on one of said segments to that on the other segment, which part extensions
20 when brought together receive the two abutting sectional members between them with the shank extending through a hole in one of said sectional members, the part lateral extensions in turn having oppo-
25 sitely projecting lugs passing through a hole in the other sectional member and

a nut engaging said screw portion for clamping the said parts together.

7. Flat sectional members attached together as claimed in Claim 6, in which 30 the screw parts are so formed that they can be fixed together by the nut in two or more positions in order to vary the space between the lateral extensions to suit different thicknesses of sectional 35 members.

8. A fastening device comprising a rod-like or bar-like member which is split or cut away on each side of a plane containing its axis leaving one or more 40 portions and thus forming a slot or recess in or between the said portion or portions of sufficient depth or width to receive a flat sectional member or members on the said plane, substantially as herein 45 described with reference to the accompanying drawings.

Dated this 8th day of April, 1936.

BREWER & SON,
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Patent Agents for the Applicant.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1936.

[This Drawing is a reproduction of the Original on a reduced scale.]

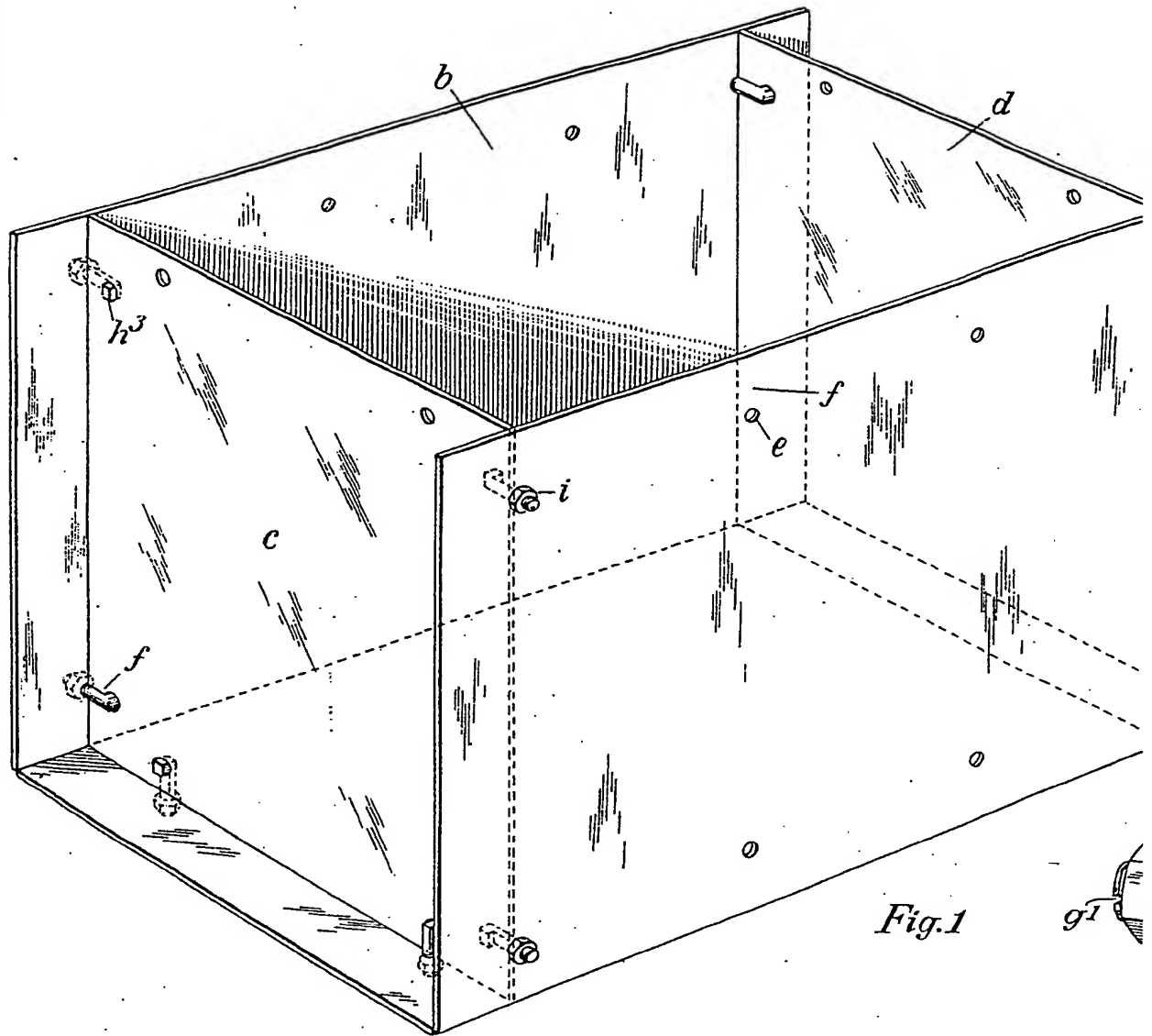


Fig. 1

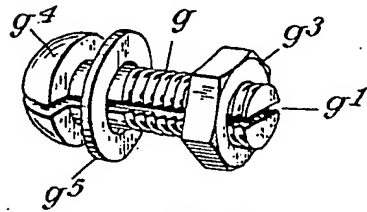


Fig. 4

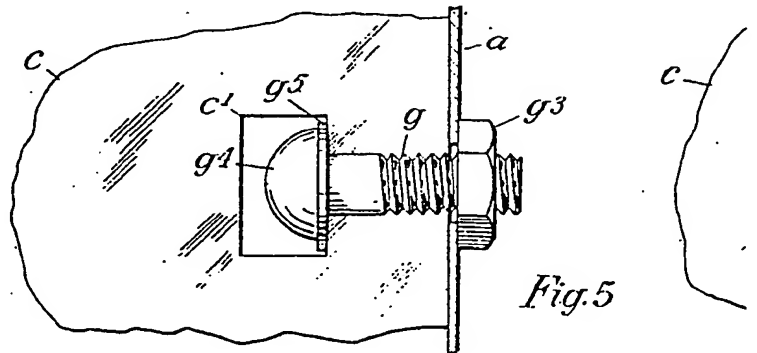


Fig. 5

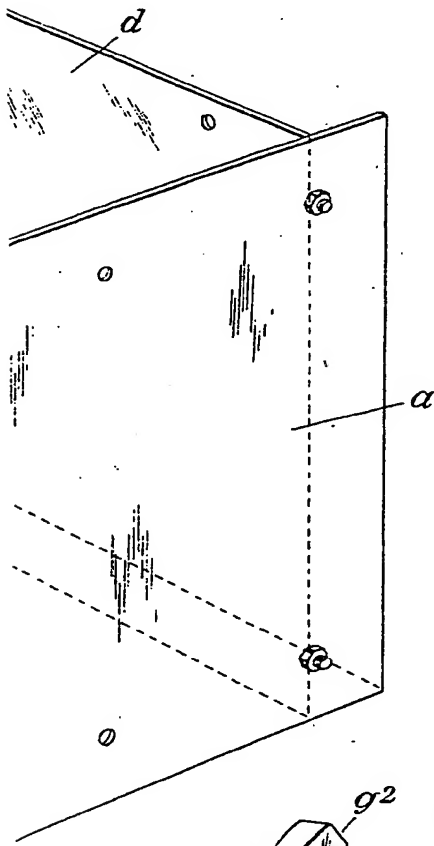


Fig. 1

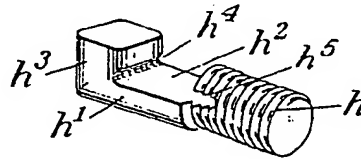


Fig. 6

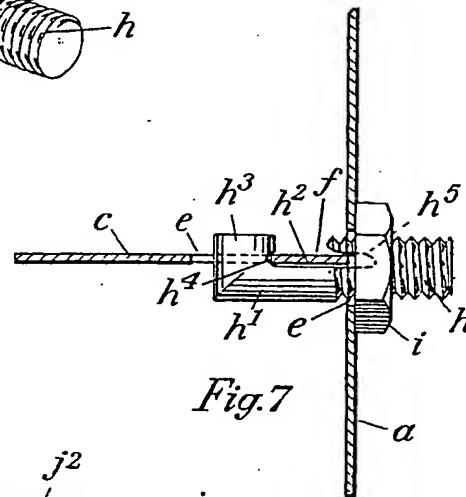


Fig. 7

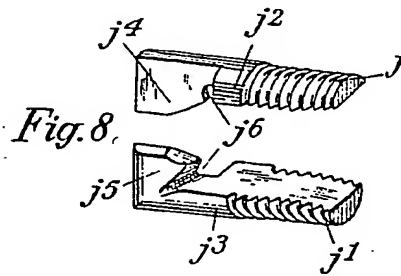


Fig. 8

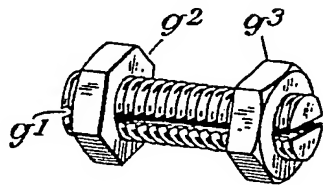


Fig. 2

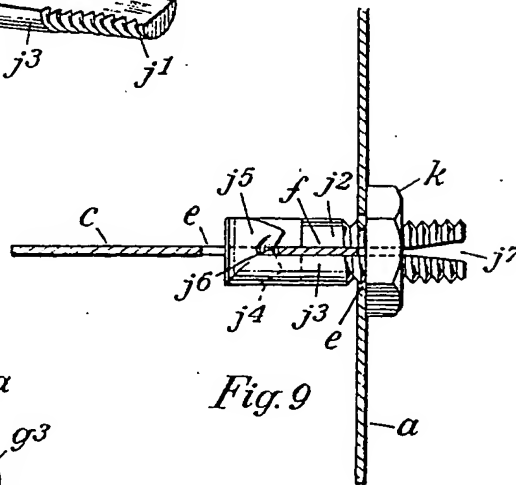


Fig. 9

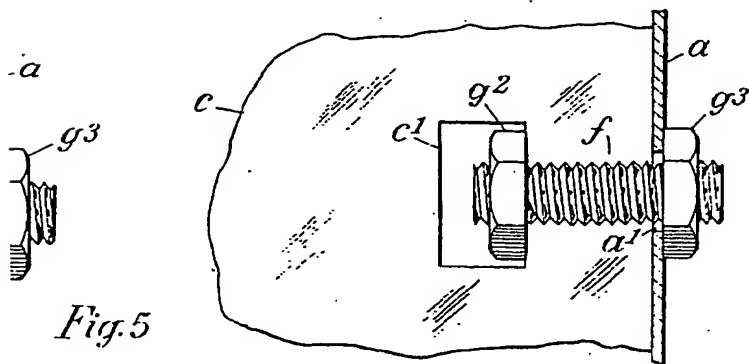
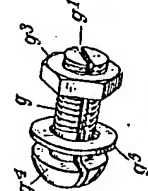
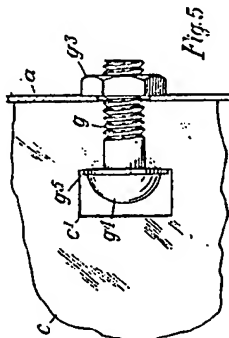
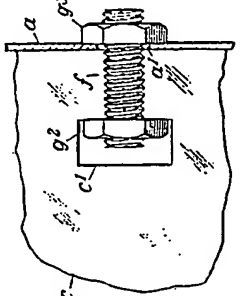
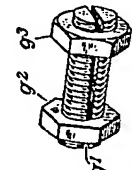
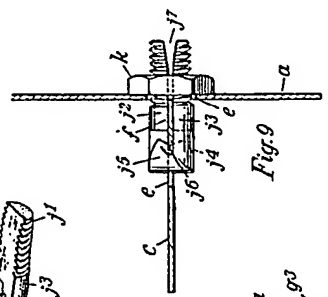
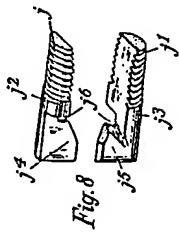
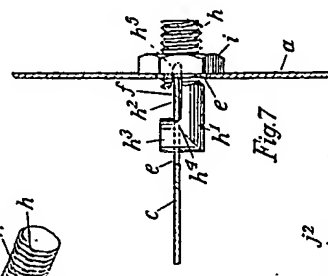
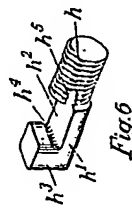
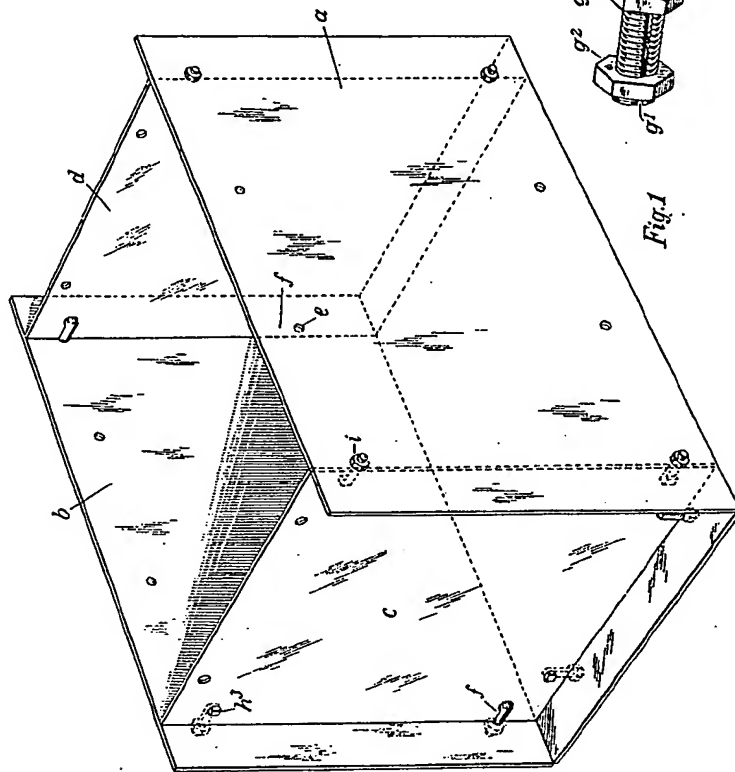


Fig. 3



Fig. 5



[This Drawing is a reproduction of the Original on a reduced scale]

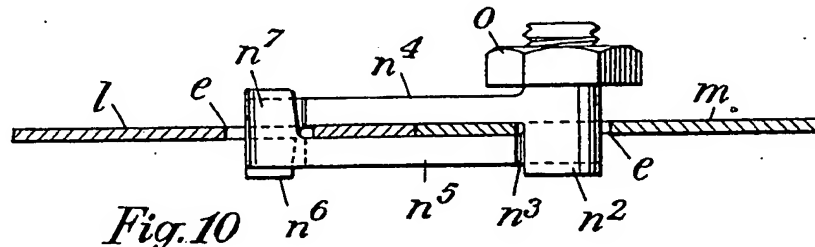


Fig. 10

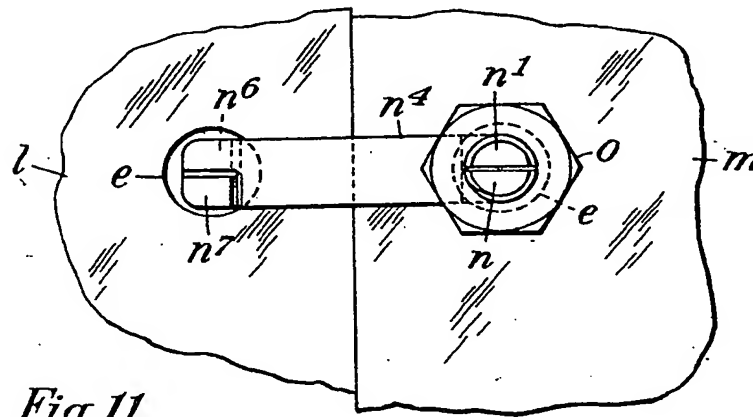


Fig. 11

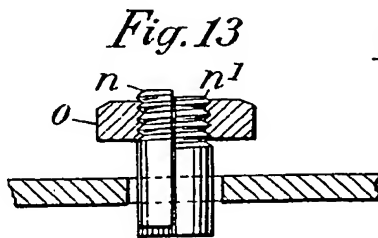
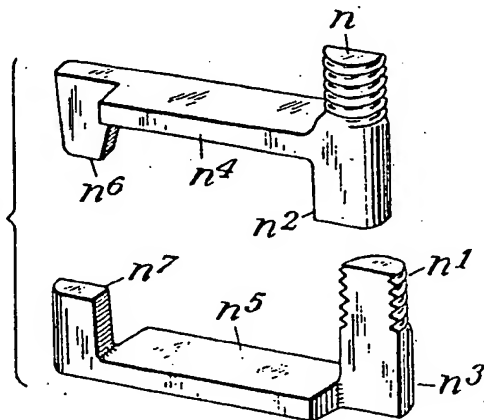


Fig. 13

Fig. 12



[This Drawing is a reproduction of the Original on a reduced scale.]